

Claims

- [c1] A secure credit card, comprising:
 - a) a counter;
 - b) a pseudo-random bit sequence generator; and
 - c) a clock for driving the counter and for driving the pseudo-random bit sequence generator, wherein said clock is operable for an unpredictable number of cycles.
- [c2] The secure credit card of claim 1 wherein the counter is a first linear feedback shift register (LFSR).
- [c3] The secure credit card of claim 2 wherein the first LFSR has a different initial state compared to other issued credit cards.
- [c4] The secure credit card of claim 2 wherein the first LFSR has a different configuration compared to other issued credit cards.
- [c5] The secure credit card of claim 2 wherein the first LFSR is configured to have a sequence length of $2^n - 1$, where n is a number of stages in the shift register.
- [c6] The secure credit card of claim 2 wherein the first LFSR has an initial state and configuration set by electronic

fuses.

- [c7] The secure credit card of claim 1 wherein the pseudo-random bit sequence generator is a second linear feedback shift register (LFSR).
- [c8] The secure credit card of claim 7 wherein the second LFSR has a different initial state compared to other issued credit cards.
- [c9] The secure credit card of claim 7 wherein the second LFSR has a different configuration compared to other issued credit cards.
- [c10] The secure credit card of claim 7 wherein the second LFSR is configured to have a sequence length of $2^n - 1$, where n is a number of stages in the shift register.
- [c11] The secure credit card of claim 7 wherein the second LFSR has an initial state and configuration set by electronic fuses.
- [c12] The secure credit card of claim 1 wherein the clock drives the counter and the pseudo random bit generator for the same number of cycles.
- [c13] The secure credit card of claim 1 wherein the clock drives the counter and the pseudo random bit generator for numbers of cycles having a fixed or predictable

mathematical relationship.

- [c14] The secure credit card of claim 1 wherein the unpredictable duration is determined by a human action.
- [c15] The secure credit card of claim 1 wherein the clock has a clock speed in the range of about 0.1–100 megahertz.
- [c16] The secure credit card of claim 1 wherein the counter and pseudo-random bit sequence generators are virtual entities emulated in an electronic processor.
- [c17] The secure credit card of claim 1 further comprising a display for displaying numbers produced by the first counter and the second pseudo random bit generator.
- [c18] The secure credit card of claim 1, further comprising a means for activating the card for a desired time duration.
- [c19] The secure credit card of claim 1, further comprising a means for activating the card for a desired number of transactions.
- [c20] The secure credit card of claim 1, further comprising a means for resetting a secure access code or PIN.
- [c21] A secure credit card, comprising:
 - a) a virtually emulated first linear-feedback shift register (LFSR);

b) a second linear-feedback shift register (LFSR) or a second virtually emulated LFSR; and
c) a clock for driving the first and second linear-feedback shift registers, wherein the clock is operable for an unpredictable number of cycles.

[c22] The secure credit card of claim 21 wherein the first LFSR and second LFSR have different initial states compared to other issued credit cards.

[c23] The secure credit card of claim 21 wherein the first LFSR and second LFSR have different configurations compared to other issued credit cards.

[c24] The secure credit card of claim 21 wherein the first LFSR and second LFSR are configured to have a sequence length of $2^n - 1$, where n is a number of shift register stages.

[c25] The secure credit card of claim 21 wherein the first LFSR and second LFSR each have an initial state and configuration set by electronic fuses.

[c26] The secure credit card of claim 21 wherein the clock drives the first LFSR and the second LFSR for the same number of cycles.

[c27] The secure credit card of claim 21 wherein the clock

drives the first LFSR and the second LFSR for numbers of cycles having a fixed or predictable mathematical relationship.

- [c28] The secure credit card of claim 21 wherein the unpredictable duration is determined by a human action.
- [c29] The secure credit card of claim 21 wherein the unpredictable duration is determined by a human action.
- [c30] A method for authenticating a secure credit card having a linear feedback shift register (LFSR), comprising the steps of:
 - a) sending from the credit card to a financial institution a card identification number uniquely associated with LFSR settings;
 - b) sending from the financial institution to the credit card a request for an output of the LFSR after m clock cycles;
 - c) operating the LFSR for m clock cycles to produce an LFSR output;
 - d) sending the LFSR output from the card to the financial institution; and
 - e) comparing the LFSR output with LFSR settings for the credit card to authenticate the credit card.
- [c31] The method of claim 30 further comprising the step of

looking up in a database at the financial institution the settings information associated with the card identification number.

- [c32] A method for authenticating a secure credit card having a counter and a pseudo-random bit sequence generator (GEN), comprising the steps of:
- a) driving the counter and the GEN for numbers of cycles having a fixed or predictable mathematical relationship;
 - b) transmitting to a financial institution outputs of the counter and GEN after step (a); and
 - c) authenticating the credit card by comparing the outputs produced in step (b) with settings of the counter and GEN known to the financial institution.
- [c33] The method of claim 32 wherein the counter and GEN are driven for the same number of cycles.
- [c34] The method of claim 32 wherein the unpredictable number of cycles is determined by a clock operated for an unpredictable duration.
- [c35] The method of claim 34 wherein the unpredictable duration is determined by a human action.